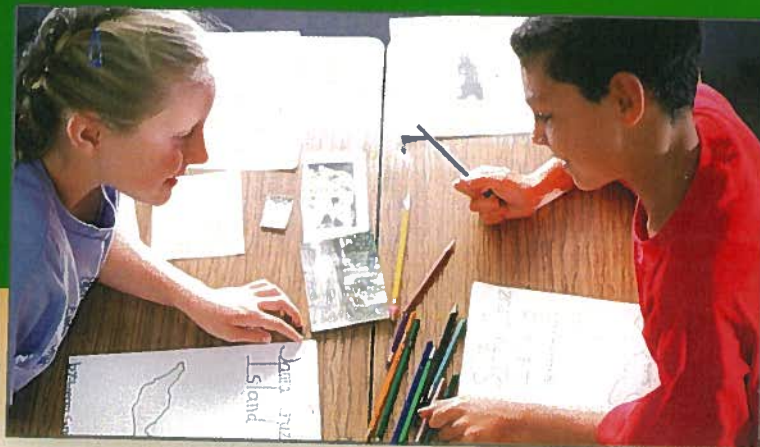


WHAT WORKS FOR SPECIAL-NEEDS LEARNERS

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PROMOTING EXECUTIVE FUNCTION IN THE CLASSROOM

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TABLE 1.4a. Students' versus Teachers' Ratings of Their Motivation and Effort on Academic Tasks That Involve Executive Function Processes

ME—Students	TPSE—Teachers
<ul style="list-style-type: none"> • Doing well in school is important to me. • I spend as much time as I need to get my work done. • I keep working even when the work is difficult. 	<ul style="list-style-type: none"> • Doing well in school is important to this student. • S/he is a hard worker. • S/he does not give up even when the work is difficult.
<i>I work hard on:</i> <ul style="list-style-type: none"> • Homework • Long-term projects • Studying for tests • Other activities (sports, music, art, hobbies) 	<i>Please judge how hard this student works:</i> <ul style="list-style-type: none"> • Homework • Long-term projects • Studying for tests • Other activities (sports, music, art, hobbies)

Note. The ME and TPSE each comprise 36 items, which are rated on a 1–5 scale.

TABLE 1.4b. Students' versus Teachers' Ratings of Their Performance on Academic Tasks That Involve Executive Function Processes

ME—Students	TPSE—Teachers
<i>Please judge how well you do on:</i> <ul style="list-style-type: none"> • Organization • Long-term projects • Making a plan before starting work • Using strategies in my schoolwork • Checking my work • Homework • Tests • Long-term projects 	<i>Please judge how well this student does on:</i> <ul style="list-style-type: none"> • Organization • Long-term projects • Making a plan before starting work • Using strategies in his/her schoolwork • Checking his/her work • Homework • Tests • Long-term projects

These examples reflect the discrepancies between students' self-perceptions and their teachers' judgments. In fact, students frequently overrate their level of academic performance in comparison with their teachers' ratings, as documented in many of our own studies and those of others (Meltzer et al., 2004a, 2004b; Stone & Conca, 1993; Stone & May, 2002). This discrepancy between teachers' and students' judgments is often linked with students' poor metacognitive awareness and with teachers' limited understanding of the extent to which executive function weaknesses are detrimental to students' performance.

When teachers understand these discrepancies and the reasons for them, they can use the MetaCOG questionnaires as a starting point for an important set of discussions with students and parents, so that they can all set common goals for the school year and can work toward these goals with similar expectations and objectives. Goal setting and prioritizing—two of the core executive function processes—can help students and teachers plan and reevaluate performance over the course of the school year (see Chapter 3).

CASE 1

Chris, 11-Year-Old Fifth Grader

*Executive Function Weaknesses That Affect Organizing,
Prioritizing, Planning, Shifting*

BACKGROUND

Chris is an 11-year-old fifth grader. His parents and teachers describe him as an enthusiastic and energetic young boy who is sociable and generally well liked by his peers. He also enjoys karate and swimming. Chris has always struggled in the classroom. Last year he was referred for a neuropsychological and educational evaluation, but the results indicated that he did not meet the criteria for the diagnosis of a learning disability or ADHD. According to reports from Chris's teachers, his performance has never matched his potential. His parents have always had a difficult time getting him to start assignments and complete his homework on time. Similarly, he has often completed long-term projects at the last minute or turned them in late. Chris often forgets to bring his books to school and appears disheveled when entering the classroom; when he does have his materials with him, they are usually scattered in his backpack. His teacher reports that Chris often spends more time looking for his assignments than actually working on them. He also struggles to prioritize information in reading comprehension assignments. He generally responds correctly to questions about specific details, but has difficulty with questions relating to the main ideas and major themes. His writing is often a stream of thoughts without a definitive beginning or conclusive ending. Despite his parents' best efforts, Chris put off studying for his most recent vocabulary test and received a failing grade.

During the past year, Chris's parents have hired an educational therapist to help Chris with his reading and writing. The therapist found at first that Chris had difficulty remembering and applying strategies for individual assignments. In addition, Chris was initially reluctant to try out some of the new strategies she suggested.

RECOMMENDATIONS

A year later, a collaborative effort between Chris's teacher and his educational therapist has made a significant difference for Chris. Chris has been using the BOTEC strategy (Brainstorm, Organize, Topic sentence, Evidence, Conclusion; see Chap-

TABLE III.1. Chris, 11-Year-Old Fifth Grader

Executive function weaknesses	Educational difficulties	Recommended strategies	Accommodations
Planning	<ul style="list-style-type: none"> • Writing is disorganized • Leaves preparation for tests and long-term projects to the last minute 	<ul style="list-style-type: none"> • BOTEC (see Chapter 2) • Weekly calendar with specific goals • Timelines 	<ul style="list-style-type: none"> • Teacher-prompted planning sheets • Daily classroom schedule posted in a central location • Teacher-created class calendar with important due dates/assignments
Organizing	<ul style="list-style-type: none"> • Struggles to organize information from readings • Does not differentiate main ideas and details • Cluttered workspace • Unprepared for class; lacks materials necessary to complete work 	<ul style="list-style-type: none"> • Triple Note Tote (see Chapters 2 and 4) • Color-coded folders/binders for different classes • Two-pocket homework folder (left: "to-do" side, right: "finished" side) • Backpack with organizers 	<ul style="list-style-type: none"> • Classroom notebook filing system for completed and to-be-completed homework, class work, and notes
Prioritizing	<ul style="list-style-type: none"> • Spends too much time on small assignments and not enough time on bigger, open-ended projects • Focuses on minor details in his written work, but misses the "big picture" 	<ul style="list-style-type: none"> • Time estimation worksheets • Daily "to-do" lists • Mapping and webbing 	<ul style="list-style-type: none"> • Teacher estimates the time Chris should spend working on assignments • Teacher prioritizes assignments based on their importance • Teacher provides clear expectations and examples
Shifting	<ul style="list-style-type: none"> • Only sees one way to solve a problem • Reluctant to use strategies and alternative approaches 	<ul style="list-style-type: none"> • Strategy notebook • M & M strategy (see Chapter 6) • Trying alternative plans for the same problem (e.g., Plan A, Plan B) • Venn diagrams (see chapter 6) 	<ul style="list-style-type: none"> • Teacher uses warm-ups at the beginning of classes (e.g., jokes, riddles, multiple-meaning words) to encourage flexible thinking • Teacher incorporates part-whole activities, analogies

ter 2) and mapping out his thoughts on paper, both of which have helped him to plan his written assignments. For long-term projects, he has used planning sheets with his teachers to identify the goal, plan of action, deadline, and anticipated final results. Using a timeline in conjunction with a daily planner has helped Chris to plan his time and follow through on open-ended projects. Color-coding his folders by subject area has also helped Chris stay organized. In the classroom, his teachers have modeled organizational strategies with a notebook filing system for classwork, homework, and notes. When Chris has had trouble gauging how long it will take to complete assignments, he has referred back to his teacher's estimate. Chris has also been using a strategy notebook with sections (e.g., reading, writing, organization) to help him access the appropriate strategies more efficiently. The strategy notebook has served as a reminder of all the strategies he can use to prepare for tests or written assignments. Chris has also added new strategies that he has learned during the year to the strategy notebook. Table III.1 summarizes all of the recommended strategies and accommodations for Chris.

CASE 2

Jenny, 13-Year-Old Seventh Grader

*Executive Function Weaknesses That Affect
Working Memory, Organizing, Planning, Prioritizing*

BACKGROUND

Jenny is an extremely social seventh grader with above-average verbal reasoning and language abilities. She is an active class participant who does especially well with collaborative and hands-on projects in her classes. However, her academic performance has been inconsistent. Last year Jenny was diagnosed with ADHD and visual-spatial difficulties. Her executive function weaknesses and her inattention have influenced her school performance in several ways. She has struggled with multistep problems in math and has had difficulty keeping track of what she reads. She has also struggled to take notes in class. She has had difficulty remembering important information in science, geography, and history. In addition, Jenny has been highly distractible in class, and her attention has wavered. As a result, she has performed poorly on tests, and her grades have often not reflected her ability or knowledge level. When confronted with assignments that have required her to plan ahead in a step-by-step manner (e.g., multistep projects, research papers), she has had difficulty breaking down tasks into small steps and following the projects through to completion. Because Jenny has found many school situations overwhelming and frustrating, she has often procrastinated with her schoolwork and

has preferred spending time with friends instead. Jenny's difficulties with organization have also compromised her ability to keep track of her materials, and she has often lost her handouts and homework. Jenny's parents have acknowledged her struggle with attention and organization, and they recognize the adverse impact this struggle has had on Jenny's school performance.

RECOMMENDATIONS

Through collaboration with her teachers and her tutor, Jenny has learned many useful strategies that have brought greater consistency to her academic performance. For example, she now makes efficient use of mnemonics such as verbal associations, acronyms, and crazy phrases in order to chunk and remember important names, dates, and facts in science, history, and geography. Inventing stories and visualizing also help her to memorize information more effectively. In order to read actively, to better sustain her attention, and to understand what she reads, Jenny has learned to use graphic organizers such as the STAR strategy (see Chapters 2 and 5). This strategy, together with summarizing paragraphs and chapters on Post-it Notes, has helped Jenny to read long texts and write reports. In math, Jenny's tutor has introduced procedure lists (which break procedures down into numbered steps) and acronyms (e.g., RAPS; Read and Rephrase, Art, Plan and Predict, Solve; see Chapter 5 and Appendix 11) to help her more effectively break down and approach math problems that require organizational skills and careful attention to numerous details. After months of practice, Jenny is more confident about using these strategies independently. She also seems more willing to persist with her math. For written assignments, Jenny has been encouraged to use a laptop computer, which she carries with her between school and home. This helps her to organize her assignments and keep track of her work. In addition, she often uses time-planning sheets and makes "to-do" lists to help her organize her time, as well as to prioritize her school tasks versus her social life.

Jenny's strategy use has been encouraged and supported by her teachers. They require Jenny as well as her classmates to complete strategy reflection sheets, which they count toward the grade. In each classroom, there is a display of memory and organizational strategies on a wall, which has helped both Jenny and her classmates with organization and planning. Jenny's teachers also check her homework and her strategy reflection sheets regularly, to monitor effective strategy use. A daily classroom schedule with goals and time limits for each lesson is also on display, to help Jenny and her peers prioritize and make efficient use of their time.

Recently Jenny had a map test in geography that required her to memorize over 70 unfamiliar terms, including countries, cities, landforms, and bodies of water. Together with her tutor, Jenny developed a study plan. She used several memory strategies to prepare for the test, including word associations (to match countries with cities) and acronyms (e.g., CAPP—Cape Horn, Andes Mountains,

Patagonia, Pampas). Jenny was extremely successful and earned 92% on her test! She also received extra credit for completing a strategy reflection sheet in which she described the strategies she had used to study.

Table III.2 summarizes the recommended strategies and accommodations for Jenny.

TABLE III.2. Jenny, 13-Year-Old Seventh Grader

Executive function weaknesses	Educational difficulties	Recommended strategies	Accommodations
Organizing, accessing working memory	<ul style="list-style-type: none"> Recalling names, dates, and facts in history, science, and geography Remembering math facts Breaking down multistep problems Organizing information from readings; reading comprehension Keeping track of information while reading Taking notes in class Test taking 	<ul style="list-style-type: none"> Mnemonics: Associations, acronyms, Crazy Phrases Visualization Verbal memory strategies: Rhymes, songs, stories Procedure lists to keep track of steps Graphic organizers (e.g., STAR strategy, chapter summary organizer), Post-it Notes Bypass strategies (e.g., use of a calculator or multiplication charts in math, word banks in science) Use of an outline to assist with note taking Access to notes from a classmate or teacher 	<ul style="list-style-type: none"> Teachers encourage and require use of strategies for homework and class assignments "Top Ten Strategies" displayed on a strategy board in the classroom Teachers give extra points for use of strategies on tests and for completion of strategy reflection sheets Monitoring of progress and strategy use through frequent evaluations and check-ins Teachers allow use of bypass strategies and extended time for tests
Organizing, planning, prioritizing	<ul style="list-style-type: none"> Keeping track of materials Completing and handing in homework, written assignments, and long-term projects Being on time to class Procrastination; balancing school work with extracurricular activities and social life 	<ul style="list-style-type: none"> Use of laptop for written assignments in school and at home Keeping belongings in same place (backpack) Organizational strategies: Calendar, "to-do" lists, mini-goals for long-term projects, assignment notebook, time-planning sheets, study plan 	<ul style="list-style-type: none"> Teachers allow use of laptop Teachers provide time each week for students to clean out backpacks and binders Daily classroom schedule, syllabus, and timelines clearly visible in class Teachers provide guidelines and strategy tips for completing tasks Frequent homework and notebook checks

CASE 3

Lucy, 15-Year-Old 10th Grader
*Executive Function Weaknesses That Affect Working
Memory, Organizing, Self-Monitoring, Self-Checking*

BACKGROUND

Lucy is a highly motivated 10th grader diagnosed with ADHD and a learning disability, which are reflected in her poor math performance. She has had difficulties retaining math concepts, as well as classroom procedures and instructions. Over the years, she has benefited from multiple exposures to information as well as many opportunities for practice. Because of her difficulties, Lucy has needed individual math support on an after-school basis. When she has put forth the effort, Lucy has been able to learn many math concepts and operations in isolation. However, she has felt overwhelmed when tasks have required her to integrate and apply concepts to more complex problems. Attentional weaknesses have also made it difficult for her to access her knowledge and to self-monitor, so she has always made "careless" mistakes.

RECOMMENDATIONS

Lucy's educational therapy sessions have been geared toward clarifying new content and teaching her strategies for remembering essential information. Lucy has created strategy cards for important formulae and step-by-step math procedures. She has also worked with her educational therapist to develop creative strategies for remembering procedures. In addition, her math teacher has provided her with weekly after-school math review sessions.

Lucy's classroom teacher has also developed activities that help students to understand their learning styles and enhance their metacognitive awareness. For example, she has used strategy reflection sheets with homework and tests to encourage students to self-reflect and apply strategies to their daily work. Lucy's class has also met regularly in small groups to share and discuss the strategies they have used. Lists of metacognitive questions and prompts, as well as procedure lists, have helped Lucy to approach multistep problems systematically and to monitor her work more effectively. For example, the following metacognitive prompts have been helpful in geometry:

1. Which quadrilateral am I working with? Is it a parallelogram? A kite? A rectangle?

2. What do I know about this quadrilateral? Think SAD—Sides, Angles, Diagnostics. Check my strategy cards for other characteristics!
3. How do I know which sides or angles are congruent?

During tests, Lucy has also benefited from using personal checklists that she has created with her teacher to find and correct errors that she commonly makes when completing assignments. She has also used her own strategy, “Top Three Hits,” to remind her to “(1) work slowly, (2) check as you go, and (3) flag difficult tasks and go back to them later.”

Lucy’s classroom teacher has emphasized the benefits of strategy use for all her students. On tests, she has permitted all her students to use checklists, strategy cards, and individual strategy notebooks. Table III.3 summarizes the recommended strategies and accommodations for Lucy (and, often, for her peers).

TABLE III.3. Lucy, 15-Year-Old 10th Grader

Executive function weaknesses	Educational difficulties	Recommended strategies	Accommodations
Memorizing, organizing	<ul style="list-style-type: none"> Remembering and accessing concepts and procedures in math Poor performance on tests and quizzes Note taking in class 	<ul style="list-style-type: none"> Strategy cards and strategy notebook Crazy Phrases and acronyms to remember order of operations in math (e.g., BEDMAS; see Chapter 5) Access to outlines or templates during lessons to scaffold information for note taking 	<ul style="list-style-type: none"> Teacher allows time for explicit strategy instruction and practice, and integrates strategies into the curriculum Monthly and yearly strategy goals Mastery and use of strategies required and encouraged by teacher (“effort” grade, Strategy Reflection Sheets)
Working memory, self-monitoring, self-checking	<ul style="list-style-type: none"> Manipulating multiple processes at one time and keeping information in working memory (in math) Test taking: Repeats the same errors on tests Poor self-checking 	<ul style="list-style-type: none"> Procedure lists (breaking procedures down into numbered steps) Metacognitive questions and prompts Personalized checklists for common errors “Give it the ONCE over” for math (Operations, Numbers, Calculation, Estimation) “Top Three Hits” (personalized checklist) 	<ul style="list-style-type: none"> Teacher allows and encourages students to refer to their strategy notebooks and personalized checklists on tests Teacher allocates additional time to check and correct work Time reserved for “strategy-sharing” discussions and reflections about learning, self-monitoring, and learning styles

CASE 4

David, 17-Year-Old 12th Grader
*Executive Function Weaknesses That Affect
Organizing, Planning, Prioritizing*

BACKGROUND

David is an outgoing high school senior with no diagnosed learning or attention difficulties. He performed well in elementary and middle school; however, the increase in complexity and volume of his academic workload has exposed weaknesses in his executive function processes, especially organization and planning. During the past year, he has had particular difficulty staying focused in required classes that are not inherently interesting to him. His notes on lectures and readings have been disorganized, and he has also lacked a consistent method of studying for his exams. When studying, he has been staying up late the night before an exam, spending many hours rereading his textbook and looking over his notes. As a result, his grades over the past year have fluctuated from A's to D's. Due to his procrastination and difficulty with initiating tasks, he has also turned in many of his papers late this year. In an effort to improve David's time management and study skills, his school counselor has advised him to attend study skills sessions after school, in addition to weekly educational therapy.

RECOMMENDATIONS

Working with his educational therapist, David has begun to set measurable, attainable goals and to reward himself when he follows through. To avoid procrastination, he has learned how to break down large tasks into manageable steps and to prioritize. David now uses time estimation worksheets to increase his awareness of how much time he needs to complete his work. He has also learned several strategies for note taking and active studying which help him to synthesize information instead of just "glancing over" the reading material and his notes. For example, he has learned to "Read, Reflect, and Write"—that is, first to *read* a section of the text, then to *reflect* on what is important, and then to *write* it down. He uses Triple Note Tote (see Chapters 2 and 4) to organize information, making it readily available for studying before tests. In addition, while reading and studying, he now underlines and indents his notes so that he can differentiate between main ideas and details. These strategies, all compiled and recorded in a strategy notebook, have helped David to study more effectively and to improve his grades. Table III.4 summarizes the recommended strategies and accommodations for David.

TABLE III.4. David, 17-Year-Old 12th Grader

Executive function weaknesses	Educational difficulties	Recommended strategies	Accommodations
Organizing, prioritizing	<ul style="list-style-type: none"> • Inefficient study skills; often simply glances over materials • Poor note-taking strategies; messy notes • Difficulty attending to details when reading • Test taking: Poor grades on exams 	<ul style="list-style-type: none"> • Strategies for note taking and active reading (e.g., Read, Reflect, Write; Triple Note Tote; margin notes and highlighting) • Strategies for making notes more visually organized: skipping lines, indenting, underlining, using bullets • Strategy notebook 	<ul style="list-style-type: none"> • Teacher requires submission of study plan • Teacher provides feedback on note taking • Teacher requires use of strategy reflection sheets and allocates part of the grade for strategy use • Study skills support
Planning, prioritizing	<ul style="list-style-type: none"> • Difficulty with time management • Procrastinates—leaves tasks until last minute • Constant feeling of being overwhelmed with work 	<ul style="list-style-type: none"> • Strategies for goal setting (long-term and short-term) and for breaking down tasks • Time estimation worksheets • Monthly and weekly calendars, “to-do” lists, planning sheets • Rewards himself for meeting goals 	<ul style="list-style-type: none"> • Submission of goal-setting and time estimation worksheets required by teacher • Teacher provides opportunities for setting goals • Teacher allows time for discussions on goal setting and strategy use • Teacher allows time and provides calendar for long-term planning